RESEARCH AS ADVOCACY

Advocacy in Medicine Workgroup @ NYAM

Hana Flaxman, Ann Palladino, & Lori Zombback
Workshop Agenda

1. Hello & Welcome
2. Intro to Health Disparities
3. The Role of Research
4. Activity: Designing a Study
5. Disseminating Your Results
Hello & Welcome
Who we are

Lori Zomback, BS, MD (c)

- Education: BS from Cornell University, MS3 at SUNY Downstate Medical Center
- Intended Specialty: ObGyn or Peds?
- Advocacy areas: Maternal health, LGBTQ+ health, educational equity
Who we are

Ann Palladino, BS, MS4

- Education: BS from NYU, MS4 at Weill Cornell
- Intended Specialty: Emergency Medicine
- Advocacy areas: DEI in STEM & Medicine
Who we are

Hana Flaxman, BA, M2

- Education: BA from University of Pennsylvania, M2 at Weill Cornell Medical College
- Intended Specialty: Primary Care
- Advocacy areas: LGBTQ+ health, healthcare equity
Let’s Hear From You!

- Name, institution, pronouns
- Advocacy areas of interest
- Favorite tradition for upcoming holidays
Intro to Health Disparities
Health Disparities Research Example

- The influence of structural racism, pandemic stress, and SARS-CoV-2 infection during pregnancy with adverse birth outcomes (Janevic et al, 2022)
- Objective
  - Examine associations between neighborhood measures of structural racism and pandemic stress with SARS-CoV-2 infection, preterm birth, and delivering small-for-gestational-age newborns.
- Methods
  - Evaluated structural racism (social/built structural disadvantage, racial-economic segregation) and pandemic-related stress (community COVID-19 mortality, community unemployment rate increase), and adverse birth outcomes by ZIP.
How Did They Get the Data?

- Measures of Structural Racism:
  - 2018 US census data
  - Index of Concentration at the Extremes (ICE): a measure of racial and economic segregation

- Measures of COVID-19 Impact:
  - NYC SARS-CoV-2 test data
  - COVID-19 mortality rate by neighborhood
  - SARS-CoV-2 serologic test done on participants

- Measures of Birth Outcomes:
  - Data on preterm birth and small-for-gestational-age newborns from EMR
Health Disparities Research Example

Findings: In adjusted analyses, structural racism measures and community unemployment were associated with both SARS-CoV-2 infection and preterm birth, but not small-for-gestational-age infants.

Among birthing persons in neighborhoods in the highest quartile of structural disadvantage:
- 94% were non-White
- 32% were seropositive for COVID
- 11% delivered preterm
- 12% delivered a small-for-gestational-age infant.

Among birthing persons in neighborhoods in the lowest quartile of structural disadvantage:
- 39% were non-White
- 9% were seropositive for COVID
- 6% delivered preterm
- 10% delivered a small-for-gestational-age infant.

Mentioned 42 times in the news!
Role of Research
Science and Society

Science

- Seeks to improve
- Informs

Technology

- Technology is the use or application of scientific knowledge for a specific goal or purpose
- Demands more

Society

- Benefits from
- Makes life easier

Technology

- Demands more
2018 NYT articles on disparities in maternal health
  ○ The US has the highest rates of maternal mortality of any developed country
    ■ 14 / 100,000 births
  ○ Black women over 3x more likely to die during childbirth

Clinicians and researchers taking closer look at maternal mortality
  ○ Ex: root cause analysis
    ■ Found 60% of deaths were preventable
  ○ Ex: checklists
  ○ Ex: effort to decrease c-section rate
Activity: Designing a Study
Project Design Workshop

- What is our research question, or topic?
  - What problems have we noticed in the medical world?
  - Considering literature and community in question generation
    - Narrowing the focus (who, what, where, when)
- What is our PICO?
  - Population
  - Intervention
  - Control
  - Outcome
- What is our hypothesis?
Method - Which is Best?

<table>
<thead>
<tr>
<th>Method</th>
<th>When Appropriate</th>
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<tbody>
<tr>
<td>Cross sectional</td>
<td>Limited resources</td>
</tr>
<tr>
<td></td>
<td>No cause and effect</td>
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<tr>
<td></td>
<td>Very safe and simple</td>
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<tr>
<td>Case Control</td>
<td>Rare disease</td>
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<td></td>
<td>Small population</td>
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<td></td>
<td>Predisposing factors</td>
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<tr>
<td>Cohort</td>
<td>Correlation not causation</td>
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<td></td>
<td>Focusing on outcomes</td>
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<td></td>
<td>Large groups</td>
</tr>
<tr>
<td>Experimental</td>
<td>Cause and effect</td>
</tr>
<tr>
<td></td>
<td>Targeted results</td>
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<tr>
<td></td>
<td>More complex, can be risky</td>
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</tbody>
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Method Considerations

- **Recruitment strategy**
  - Where? When? Who?

- **Data collection**
  - Qualitative vs. quantitative
  - Validated surveys and measures

- **Ethical considerations**
  - People who are incarcerated or homeless
  - Pregnant women, children

- **Avoiding bias**
  - Randomization, blinding
  - Accounting for confounders
  - Deidentifying data

- **Community collaboration**
  - Focus groups
  - Consultation
  - Community based participatory research
Data Analysis
Data Analysis: Statisticians can help you but . . .

A group of endocrinologists conducted a randomized controlled trial to compare the efficacy of capsaicin versus turpentine oil for topical treatment of painful diabetic neuropathy. Patients were randomly assigned to topical application of either capsaicin (Group A) or commercially available turpentine oil (Group B) over a painful site on their feet. The primary outcome was significant reduction in pain on visual analogue scale (VAS), and treatment efficacy defined as ≥3-point reduction on VAS. An excerpt of the study results is shown below.

![Chart showing treatment efficacy between groups.](chart.png)

Which of the following tests would be most appropriate to determine whether there is a statistically significant difference in treatment efficacy between the 2 groups?

- A. Chi-square test
- B. Correlation analysis
- C. Meta-analysis
- D. Two-sample t-test for means
- E. Survival analysis
Regression (linear and logistic) is predicting a relationship between variables; ie given pt is in Group A, what is probability of treatment being efficacious
Practice Case - What test should we run?

- # of Tests Ordered for English vs Non-English Speakers
  - Independent Variable?
  - Dependent Variable?

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<thead>
<tr>
<th>Independent variable</th>
<th>Qualitative (categorical)</th>
<th>Quantitative</th>
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<td>Chi-square, logistic regression*</td>
<td>t test, ANOVA, linear regression</td>
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*Dependent variable must be dichotomous.

ANOVA = analysis of variance.
Practice Case - What test should we run?

- # of Tests Ordered for English vs Non-English Speakers
  - Independent Variable? **Categorical** (Eng vs Non-Eng)
  - Dependent Variable? **Quantitative (# Tests)**

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**ANOVA** = analysis of variance.

Answer: **T-test**

- **T-test** = 2 Independent Variables (i.e. Eng vs Non-Eng)
- **ANOVA** = 3+ Independent Variables (i.e. Eng, Span, French, etc)

Green = Non-eng
Red = Eng

# Tests
Disseminating Your Results
Why It Matters

- All research builds upon itself
  - Spark future studies
  - Communicate with other scientists near and far
- Can have societal impact
  - Public interest
  - Policy change
- Make connections to build your career
Where To Publish - Scientific Journals

● Getting your research out to the scientific community

● Choose a journal before you start writing
  ○ Tailor things like target audience, word count, tables and graphs
  ○ Think about scope - there are journals that are broad and journals that are very specific
  ○ Some are more competitive, so don’t be dissuaded

● How to choose a journal
  ○ Do some online research
  ○ https://authorservices.taylorandfrancis.com/resources/choosing-journal-ebook/
  ○ Ask your professors or colleagues
  ○ Ask the librarian at your institution
Some Options for Publishing in a Scientific Journal

- Types of articles
  - Major article
  - Brief report
  - Case report
  - Letter to the editor
- Making your data set accessible
- Open access
Scientific Journal Process

- Write and submit initial manuscript
  - Edit a million times
  - Make sure to format correctly
  - Citations in proper style
- May get an acceptance or rejection but commonly conditional
  - Will need to address peer-reviewers’ comments and re-submit
- Hopefully get accepted
- Approve their proof
- Hang it on your fridge
Conferences

- Great way to meet and network with people in your field
- Can go to a conference with preliminary results
- More accessible (but less social) with virtual conferences
- Can do a poster or oral presentation
Where to Publish - Lay Media

- Getting your research out to the community impacted by the research
- Local, regional, or national newspaper
  - Opinion or letter to the editor
- News channels, radio, or podcasts
- Letters to politicians calling for change
  - Could be as local as school policy or as far-reaching as national policy
The Politics of Advocacy: Strategies in Private & Public Sector are NOT the same

Evidence-based policymaking is not like evidence-based medicine, so how far should you go to bridge the divide between evidence and policy?

Paul Cairney & Kathryn Oliver

Health Research Policy and Systems, 15, Article number: 35 (2017) | Cite this article

The “evidence-policy gap” is the gap between “the production of evidence by scientists and its use by policymakers”

from 126 health policy studies published from 2000–2012. The most frequently-reported barriers relate to problems with disseminating high quality information effectively, namely the lack of time, support, resources and incentives for scientists to engage in dissemination. These studies suggest that scientific evidence is often not presented at the correct time and scientists are unable to anticipate a demand for information to solve a very specific problem quickly.
These are just the tip of the iceberg!

- Poor understanding of research (by policy makers)
- Poor understanding of policy making (by researchers)
- Bounded rationality
- MANY stakeholders
- The shortcomings of research (incomplete, conflicting, etc)
- Rapid shifts in attention
- The role of pathos in policy
- Government "Niches"
Understand policy-making theory
Ex: The policy cycle is an old model, now we use the policy environment (i.e. policy on health equity)

Come back for Workshop #3 on Policy Making

Play the long game!
Become a trusted stakeholder in a specific niche

Bounded rationality

The role of pathos in policy

MANY stakeholders

The shortcomings of research (incomplete, conflicting, etc)
References

6. Cairney, P., Oliver, K. Evidence-based policymaking is not like evidence-based medicine, so how far should you go to bridge the divide between evidence and policy?. Health Res Policy Sys 15, 35 (2017). https://doi.org/10.1186/s12961-017-0192-x
Thanks!

Questions, Comments, Feedback?

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Extra Slides
Common Questions (Answers in comments)

- What is the difference between Sensitivity and PPV? When is each beneficial? What affects PPV/NPV?
- When do you calculate OR vs RR?
- What is the difference between AR and ARR?
- What is the +LR and -LR and when do you use them?
Statistics Cheat Sheet

Truth / Outcome:

- **RR (Risk Ratio)**: ratio of event in exposure group to event in non-exposure group
  - \( RR = \frac{\text{RR}}{\text{R}} \)
  - If 95% CI cases = 1, not significant (i.e., \( 1.5 \leq \text{RR} \leq 2.1 \))
  - RRR (Relative Risk Reduction)
    - 1 - RR, relative reduction in event rate in exposed vs. not exposed
  - AR (Absolute Risk Reduction)
    - The risk of disease exposure minus the risk faced that exists without exposure
      - AR = \( \frac{\text{RR} - 1}{\text{RR}} \)
      - The actual difference in event rate in exposed vs. not exposed (similar to RRR)

- **NNT (Number Needed to Treat)**
  - Treatment needed to treat 1 case
  - \( NNT = \frac{1}{\text{NNT}} \)
  - \( \text{NNT} = \frac{\text{NNT}}{\text{NNT} - 1} \)
  - Probability of 0 or 40 being 0
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